

Precision Academics©

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Numeracy Drills Level 20.1

Student:



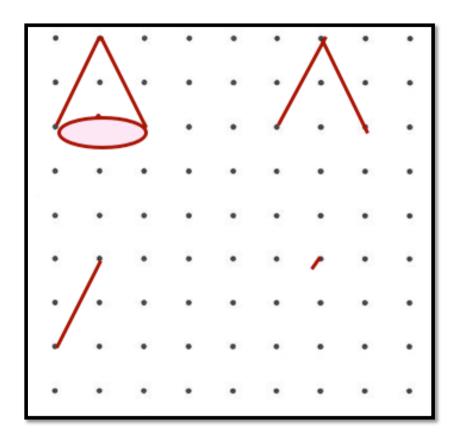
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Numeracy Assessment: 255-264 Spiral Mathematics Partners: F4-F6



USE A RULER!!!

Use the dots to help you to draw 3 more cones.



A cone has edges.	
A cone has faces.	
A cone has corner.	
A cone (can or can't)	roll



What Fraction?	
1	
1/_	
1/_	
1/_	
1/_	
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		~	7	0	4	2
0	0	2	7	€	8	0
_	_	က	1	2	7	6
					+	
0	0	Ф	က	7	4	0
_	_	0	2	3	7	∞
		က	~	2	~	2
					4	

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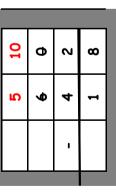
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9

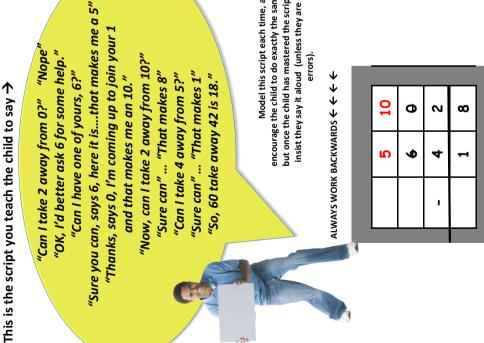


encourage the child to do exactly the same thing, but once the child has mastered the script do not insist they say it aloud (unless they are making Model this script each time, and



Watch what happens when there are zeroes in the middle.

9





Subtracting 6

16 - 6 =	28 - 6 =
14 - 6 =	29 - 6 =
12 - 6 =	8 - 6 =
11 - 6 =	21 - 6 =
10 - 6 =	20 - 6 =
9 - 6 =	8 - 6 =
9 - 6 =	8 - 6 = 14 - 6 =
6 - 6 =	14 - 6 =

Look for the pattern ... Fill in the next two numbers.



99, 97, 95, <u>93, 91</u>

Pattern is: Take away 2

 $88, 90, 92, \underline{\hspace{1cm}}$ Pattern is: $\underline{\hspace{1cm}}$

11, 17, 23, ___, ___

→ Pattern is: _____

50, 40, 30, ___, ___ → Pattern is:

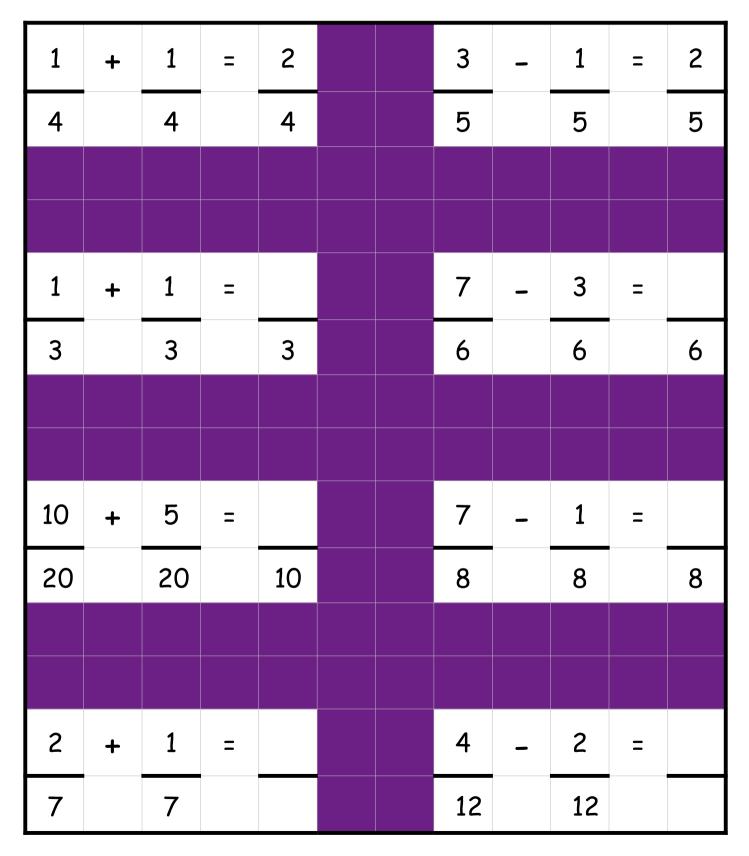
What is?



The third number after 210?
Five lots of seven?
11 written as a word?
The last number before fourteen?
The number between 21 and 19?
The number right before 200?
Seven more than nineteen?
The fifth multiple of nine?
The last even number before 200?
Six less than thirty-three?

Adding and Subtracting Fractions

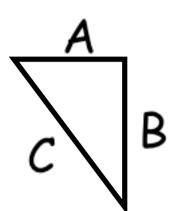
You are only allowed to add and subtract fractions when the nuthe bottom, called the denominators, are exactly the same.



Measuring the sides of right angle triangles is very easy if we use the "Pythagoras Rule". Use your calculator.



Side C = The square root of (Side A squared + Side B squared)



$$C = \sqrt{A^2 + B^2}$$

Side ${\cal C}$ is called the "h_		•
It is the side o	the right a	ngle

So, if A is 3cm and B is 4cm then ... And, if A is 12cm and B is 12cm

$$C = \sqrt{A^2 + B^2}$$

$$C = \sqrt{A^2 + B^2}$$

$$C = \sqrt{A^2 + B^2}$$

$$C = \sqrt{12^2 + 12^2}$$

$$C = \sqrt{9 + 16}$$

$$C = \sqrt{25}$$

$$C = \sqrt{5cm}$$

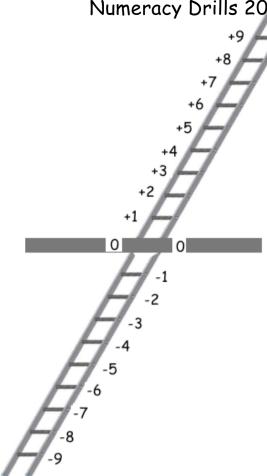
$$C = \sqrt{6m}$$

Important words: What is half of 40? _____ What is double eight? _____ What is five squared? _____ What is the square root of forty-nine? _____ What is a quarter of 12? _____ What is one third of 12? What is one fifth of 15? _____ Draw a short diagonal line:

Draw 2 short non-parallel lines:

Draw a right (or 90 degree) angle:







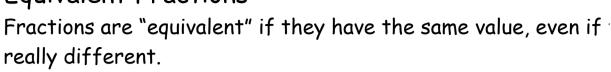
This number line shows how positive numbers get higher as they get bigger, but negative numbers get lower as they get bigger.

So, +8 is greater than +2 +8 > +2 but -8 is less than -2 -8 < -2

Fill in the signs for greater than > or less than < for each pair of numbers.

$$0 < +2$$

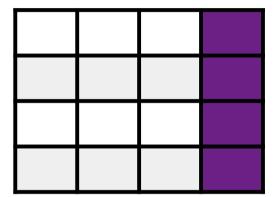
Equivalent Fractions



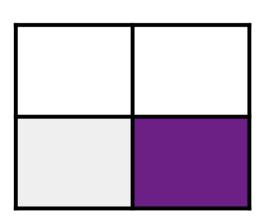


For example,

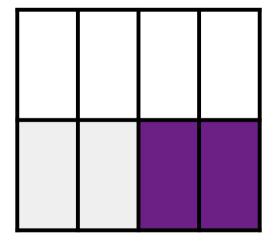
This box is 3/12 full.



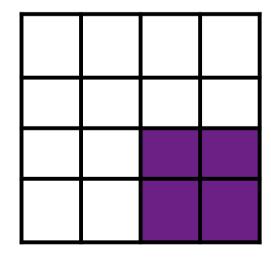
This box is 1/4 full.



This box is 2/8 full.



This box is 4/16 full.



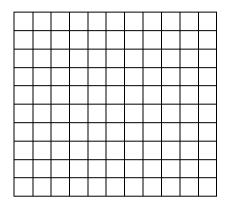
There is no difference at all in the value of ->

3/12 and 1/4 and 2/8 and 4/16 So, these are "equivalent" fractions.

This is our introduction to decimals.

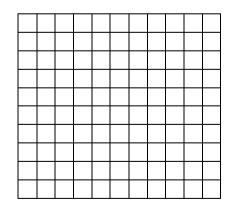
Each big box has been divided into 100 smaller squares.

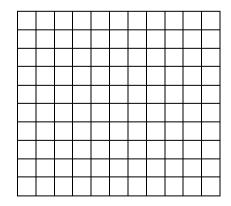
1 big box can be written as 1.00



Colour only 35 squares in the box above. Now, we can say that 0.35 of the box has been coloured.

2 big boxes can be written as 2.00





Colour only 195 squares in the two boxes above. Now, can say that 1.95 boxes have been coloured.



Adding 4

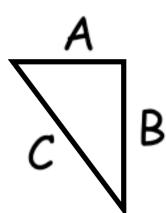
64 + 4 =	43 + 4 =
74 + 4 =	88 + 4 =
40 + 4 =	75 + 4 =
41 + 4 =	46 + 4 =
89 + 4 =	97 + 4 =
43 + 4 =	98 + 4 =
54 + 4 =	74 + 4 =
40 + 4 =	90 + 4 =
61 + 4 =	41 + 4 =
67 + 4 =	99 + 4 =

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Measuring other sides of right angle triangles is just (we re-arrange "Pythagoras Rule". Use your calculato



Side A = The square root of (Side C squared - Side B squared)



$$A = \sqrt{C^2 - B^2}$$

Side C is called the "h_____ It is the side o_____ the r____ angle.

So, if C is 5cm and B is 4cm then ... And, if C is 5cm and B is 3cm

$$A = \sqrt{C^2 - B^2}$$

$$A = \sqrt{5^2 - 4^2}$$

$$A = \sqrt{25 - 16}$$

$$A = \sqrt{9}$$

$$A = 3 \text{ cm}$$

$$A = \sqrt{C^2 - B^2}$$

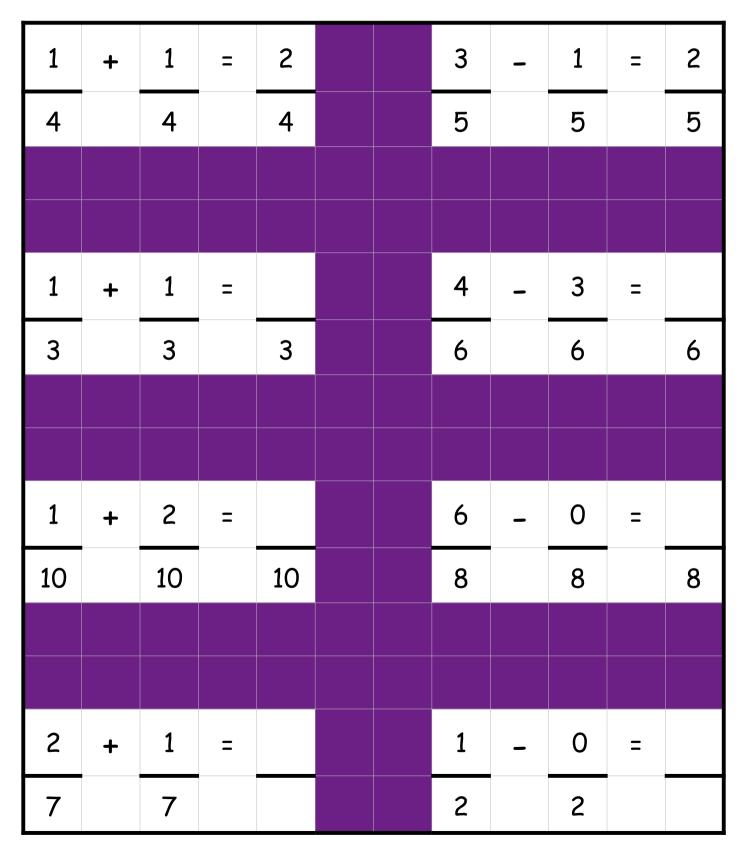
$$A = \sqrt{5^2 - 3^2}$$

$$A = \sqrt{A}$$

X	O Times Tables	1 Times Tables	2 Times Tables	Times	4 Times Tables	5 Times Tables	6 Times Tables	7 Times Tables	8 Times Tables	9 Times Tables	10 Time Table		.2 mes
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6				10	11	12
2	0	2	4	6	8	10	12				20	22	24
3	0	3	6	9	12	15	18				30	33	36
4	0	4	8	12	16	20	24				40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12				36	42	48	54	60	66	72
7	0	7	14				42	49	56	63	70	77	84
8	0	8	16				48	56	64	72	80	88	96
9	0	9	18	27	36	45	54	63	72	81	90	99	108
10	0	10	20	30	40	50	60	70	80				120
11	0	11				55	66	77	88				132
12	0	12				60	72	84	96				144

Adding and Subtracting Fractions

You are only allowed to add and subtract fractions when the nuthe bottom, called the denominators, are exactly the same.



INUMERACY DRIIS CU.I



When we "round off to the nearest 100", it means we have to go forwards or backwards to the nearest multiple of 100.

No matter how big the number is,

we just look at the last 2 digits.

If the last 2 digits are between 01 and 49 then we "round down"

And if the last 2 digits are between 50 and 99,

then we "round up".

→ 905 rou	+100	66	98	97	96	92	94	93	92	91
	06	68	88	87	86	85	84	83	82	81
→ 815 rou	80	79	78	77	76	75	74	73	72	71
	02	69	68	67	99	65	64	63	62	61
466 rou	09	29	58	57	26	22	54	53	52	51
→ 901 rou	50	49	48	47	46	45	44	43	42	4 /
	40	68	38	37	36	35	34	33	32	31
→ 899 rou	30	29	28	27	26	25	24	23	22	21
→ 725 rou	20	19	18	17	16	15	14	13	12	7
; •	10	6	œ	7	9	5	4	က	7	_
→ 578 rou										

Round off to the nearest hundred unds off to ___ unds off to __ unds off to __ → 578 rounds off to_ → 111 rounds off to _ → 362 rounds off to _ unds off to_ unds off to_ unds off to

8

Is the group on this side...

greater than or equal to ≥ or less than <

... the group on the ...

6 ≥ 4

7 < 10

5 ≥ **5**

61 41

77 ___ 77

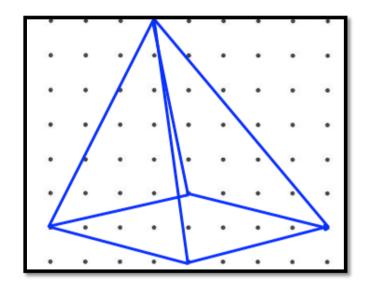
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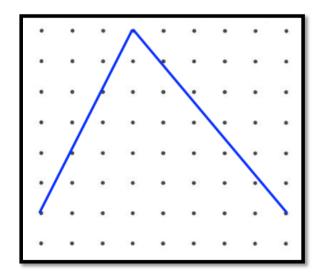
707 770



USE A RULER!!!

Use the dots to help you finish drawing the second square pyramid.





Α	square	pyramid	has	 edges.

A square pyramid has ____ faces.

A square pyramid has ____ corners.

A square pyramid (can or can't) _____ roll.



Multiplying by 900→ Multiply by 9 and add a 00

X 900 = 3 600	X 900 = 7 200
0 X = 0	7 X = 6 300
4 X 900 =	10 X 900 =
X 900 = 1 800	0 X = 0
5 X 900 =	5 X = 4 500
X 900 = 10 800	1 X 900 =
1 X = 900	6 X 900 =
10 X 900 =	X 900 = 10 800
X 900 = 9 900	3 X = 2 700



To make complex addition easier, it is time to learn the 3-number teams to 10 ... When the sum of two or more numbers is 10, cross out the numbers which add to 10, then write 10 in the space above, just as is shown in red in the examples.

If leftover numbers add up to greater than 10, write that number in red, just as shown in the examples.

4, 4, _

۷,

'n,

6,

'n,

6,

Fill in the missing member of each team to ten.

1, _ ,		-								+
∞,										
_										
			ı							,
۰				3	9	t	7	0	2	
۱			0	ŧ	0	0	t	₹	0	
۰	8	0	1		o p	4	t	Сф	4	
۰	1	1						+	7	
										_
۰				0	đ	3	ŧ	7	2	
۰	L	9	0	#	0	a h	οΦ	οΦ	9	
	0	1	1		8	8	₹	7	7	
	1							+	1	

 8
 8

 8
 8

 1
 4

 2
 7

 2
 7

 4
 3

 3
 8

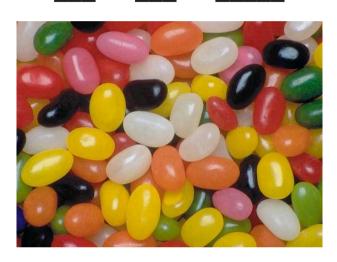
 4
 3

 0
 7

Follow this model exactly - DO NOT skip steps



If I eat 12 jelly beans every day for 12 days, how many Jelly Beans would I eat altogether?



If I eat 11 jelly beans every day for 6 days, how many Jelly Beans would I eat altogether?

If I eat 9 jelly beans every day for 7 days, how many Jelly Beans would I eat altogether?

If I eat 403 jelly beans every day for 10 days, how many Jelly Beans would I eat altogether?

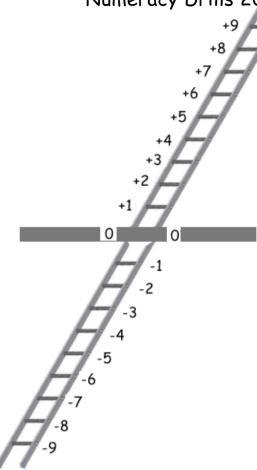
Fill in the "Subtraction Partners of 40" (these are some of the pairs of numbers that subtract to 40)



$$50 - 10 = 40$$

$$49 - 9 = 40$$







Count how many steps it is from the first number to the second number.

From 0 to -8 is 8 steps down ... So,
$$-8 = -8$$

Adding and Subtracting Fractions

You are only allowed to add and subtract fractions when the nuthe bottom, called the denominators, are exactly the same.

1	+	1	=	2		3	-	1	=	2
4		4		4		5		5		5
2	+	1	=			4	_	3	=	
3		3		3		6		6		6
4	+	2	=			6	_	4	=	
10		10		10		8		8		8
4	+	2	=			22	-	7	=	
7		7				27		27		



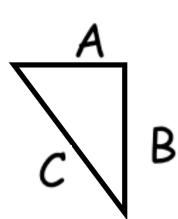
Multiplying by 6

0 X 6 =	9 X 6 =
1 X 6 =	11 X 6 =
2 X 6 =	12 X 6 =
3 X 6 =	8 X 6 =
4 X 6 =	6 X 6 =
5 X 6 =	1 X 6 =
6 X 6 =	5 X 6 =
7 X 6 =	10 X 6 =
8 X 6 =	2 X 6 =
9 X 6 =	4 X 6 =

Measuring other sides of right angle triangles is just we re-arrange "Pythagoras Rule". Use your calculate



Side A = The square root of (Side C squared - Side B squared)



$$A = \sqrt{C^2 - B^2}$$

Side C is called the "h_		_"·
It is the side o	the r	angle.

So, if C is 5cm and B is 4cm then ...

And, if C is 7cm and B is 4cm

$$A = \sqrt{C^2 - B^2}$$

$$A = \sqrt{5^2 - 4^2}$$

$$A = \sqrt{25 - 16}$$

$$A = \sqrt{9}$$

$$A = 3 \text{ cm}$$

$$A = \sqrt{C^2 - B^2}$$

$$A = \sqrt{7^2 - 4^2}$$

$$A = \sqrt{A}$$

$$A = \sqrt{A}$$

$$A = \sqrt{A}$$

Addition Partners of 10, 20, 30, 40, 50



0 + 10 = ___

26 + = 30

8 + = 20

43 + 7 =

0 + = 40

11 + = 20

20 + 10 = ___

4 + = 10

6 + ___ = 50

15 + 5 = ___

30 + = 30

2 + 8 =

42 + 8 = ___

+ 1 = 10

3 + 17 = ____

___ + 31 = 40

___ + 9 = 30

6 + 44 = ____

+ 13 = 20

___ + 2 = 10

32 + 8 = ___

___ + 30 = 40

+ 44 =

___ + 5 = 10



PRECISION ACADEMICS NUMERACY DRILLS: LEVEL 20.1

STUDENT NAME:	DATE:

OUTCOMES AND PERFORMANCE INDICATORS

WORK SAMPLES: Select 3 to 5 pages of work from this Workbook to keep as a permanent record of the student's current level of academic achievement, mastery and independence.

*All Precision Academics Workbooks use LEVEL OF MASTERY® to assess student performance:

LEVEL OF MASTERY® Scoring Key:

- 1 The student has had exposure to this task, but has not yet mastered any aspect of this skill.
- 2 The student is in the earliest stages of accomplishing this task and needs complete guidance.
- 3 The student can accomplish this task but requires physical prompting and verbal assistance.
- 4 The student can accomplish this task, but requires minimal guidance (eg. hint, reminder).
- 5 The student can accomplish this task independently.

OBJECTIVE - Working Mathematically: Students develop understanding & fluency in mathematics through inquiry, exploring & connecting mathematical concepts, choosing & applying problem-solving skills & mathematical techniques, communication a reasoning.

Life Skills outcomes A student:	Stage Three outcomes A student:	Examples of Specific Indicators included in this Workbook Series: Numeracy Drills 20.1 to 20.5	Level of Mastery© demonstrated by the student
applies mathematical strategies to solve problems MALS-2WM	selects and applies appropriate problem- solving strategies, including the use of digital technologies, in undertaking investigations MA3-2WM	The student is able to select an appropriate set of strategies to solve a complex problem. "Eg. How quickly can you copy all of these symbols on the matching pictures on the next page?"	1 2 3 4 5

Objective - Number and Algebra: Students develop efficient strategies for numerical calculation, recognise patterns, describe relationships and apply algebraic techniques and generalisation.

Life Skills outcomes A student:	Stage Three outcomes A student:	Examples of Specific Indicators included in this Workbook Series: Numeracy Drills 20.1 to 20.5	Level of Mastery© demonstrated by the student
counts in familiar contexts MALS-5NA	selects and applies appropriate strategies for addition and subtraction with counting numbers of any size MA3-5NA	The student can count from any integer value, positive or negative, with model present. Eg. "From +4 to -5 is steps down; so, +4 - 5 ="	1 2 3 4 5
represents and operates with fractions, decimals or percentages in everyday contexts MALS-9NA	compares, orders and calculates with fractions, decimals and percentages MA3-7NA	The student can add and subtract simple fractions with the same denominator.	1 2 3 4 5
selects and uses strategies for addition and subtraction MALS-10NA	selects and applies appropriate strategies for addition and subtraction with counting numbers of any size MA3-5NA	The student is able to use apply the "friends of 10" and "groups to 10" and as strategies in the number sentence presentation of multiple additions. Eg. " $3 + 17 + 9 = $ "	1 2 3 4 5
selects and uses strategies for multiplication and division MALS-11NA	selects and applies appropriate strategies for multiplication and division, and applies the order of operations to calculations involving more than one operation MA3-6NA	The student can divide simple numbers up to the thousands, following the times table strategy. Eg. "7 200 ÷ 90 ="	1 2 3 4 5



PRECISION ACADEMICS NUMERACY DRILLS: LEVEL 20.1

STUDENT NAME:	DATE:
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selects and uses strategies for multiplication and division MALS-11NA	selects and applies appropriate strategies for multiplication and division, and applies the order of operations to calculations involving more than one operation MA3-6NA	The student can multiply simple numbers up to the thousands, following the times table strategy. Eg. "1 200 X 90 ="	1	2	3	4	5
recognises and matches coins and notes MALS-12NA	orders, reads and represents integers of any size and describes properties of whole numbers MA3-4NA	The student can identify the total value of groups of money combining bills and coins.	1	2	3	4	5
plans and manages personal finances MALS-17NA	selects and applies appropriate strategies for addition and subtraction with counting numbers of any size MA3-5NA	The student can apply all addition, multiplication, division, estimation, subtraction skills to money calculations.	1	2	3	4	5
recognises and continues repeating patterns MALS-18NA	analyses and creates geometric and number patterns, constructs and completes number sentences, and locates points on the Cartesian plane MA3-8NA	The student can identify the missing number in more difficult continuing pattern. Eg. "Which number comes next? 0.6, 0.9, 1.2,"	1	2	3	4	5

OBJECTIVE Measurement and Geometry: Students identify, visualise and quantify measures and the attributes of shapes and objects, and explore measurement concepts and geometric relationships, applying formulas, strategies and geometric reasoning in the solution of problem.

Life Skills outcomes A student:	Stage Three outcomes A student:	Examples of Specific Indicators included in this Workbook Series: Numeracy Drills 20.1 to 20.5	Level of Mastery© demonstrated by the student
organises personal time and manages scheduled activities MALS-24MG	uses 24-hour time and am and pm notation in real-life situations, and constructs timelines MA3-13MG	The student can interpret a study timetable.	1 2 3 4 5
recognises and uses units to estimate and measure length MALS-26MG	selects and uses the appropriate unit and device to measure lengths and distances, calculates perimeters, and converts between units of length MA3-9MG	The student can calculate perimeter of a rectangle and square.	1 2 3 4 5

OBJECTIVE Statistics and Probabilities: Students collect, represent, analyse, interpret and evaluate data, assign and use probabilities, and make sound judgements

Life Skills outcomes A student:	Stage Three outcomes A student:	Examples of Specific Indicators included in this Workbook Series: Numeracy Drills 20.1 to 20.5	Level of Mastery© demonstrated by the student
recognises the elements of chance and probability in everyday events MALS-39SP	conducts chance experiments and assigns probabilities as values between 0 and 1 to describe their outcomes MA3-19SP	The student can assign a probability, expressed as a fraction. Eg. "What are the chances of selecting a blue ball - 1 out of 4 - ½"	1 2 3 4 5